

## **“Whither Presidential Approval?”**

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## Abstract

Until recently, presidential job approval has been positively correlated with a healthy economy. Despite sanguine macroeconomic indicators, President Trump's job approval numbers appear to be quite low. Using a Bayesian model to infer latent presidential approval and to regress approval on macroeconomic indicators, we find strong evidence of a structural break between approval and such indicators, commencing with the inauguration of President Obama. We also find that the macroeconometric model has lost some predictive power, and that the magnitudes and directions of associations between approval and macroeconomic variables have changed. Lastly, we posit that structural changes to the economy and the polarized political landscape may contribute to the changing of the meaning of presidential approval, which now appears to be a proxy for party identification.

## I. Introduction

The election of Donald Trump to the presidency disturbed the social and political mainstream in ways not easily measurable. Even as a presidential candidate, Mr. Trump explicitly sought to unsettle the status quo, and his election surprised numerous political prognosticators, who predicted he would most likely lose (see, most notably, Nate Silver's 538 Project).

As president, Donald Trump continues to confound scholars and citizens alike with speeches, tweets, and policy positions, many of which can safely be described as norm breaking. This norm breaking is especially noteworthy as it seems to align with U.S. political polarization, which, according to the Partisan Conflict Index measure reported by the Federal Reserve Bank of Philadelphia, began to spike upwards in 2010 and reached a high in March 2017, the second month of the Trump Presidency (see Azzimonti 2014 and 2018). This partisanship is especially evident within the presidential approval data, in which most Republicans (89%) approve of President Trump's handling of the presidency, in contrast with only 6% of Democrats.<sup>1</sup>

While presidential approval always contained some element of partisanship, this exacerbated partisanship may help explain if not redefine what constitutes presidential approval. Presidential approval has conventionally been thought to be the product of several components, namely (a) a honeymoon effect that takes place after the president's election victory; (b) domestic economic growth; (c) foreign policy (i.e., diplomatic and/or military achievements); and (d) rally around the flag effects, many of which are intertwined with significant domestic or foreign policy events (e.g., Mueller 1973; Edwards and Gallup 1990; and Choi et al. 2016).

The existing literature states that the citizenry tends to reward presidents who preside over periods of economic growth with high presidential approval levels. Yet despite the strong performance of the economy by many traditional measures, President Trump's presidential

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<sup>1</sup> Results as of the October 22-28, 2018 Gallup poll. See <https://news.gallup.com/poll/203198/presidential-approval-ratings-donald-trump.aspx> for more recent results.

approval numbers appear to be quite low, relative to other presidents.<sup>2</sup> According to data from the Bureau of Labor Statistics, U.S. unemployment is and remains at historic lows, reaching 3.7% in October of 2018. Compound the above data with the stock market's ascent and relatively muted inflation levels (a monthly rate of 2.2% in September 2018 according to the Bureau of Labor Statistics) and one has an empirical puzzle. Why is presidential approval moribund, given the positive economic factors that normally generate or indicate high approval?

We argue that the diminished association between strong economic data and presidential approval *precedes* the Trump presidency and began during President Obama's presidential tenure. This phenomenon suggests that (a) presidential approval – both in its definitional meaning and associations (with unemployment rates, consumer confidence, diplomatic and military achievements) needs scholarly re-examination; and (b) additional, systematic study is warranted to explain better whether other forces within the U.S. may help explain the meaning and value of presidential approval, and what it will likely portend in the future. In light of our analysis, we argue that presidential approval changed significantly with the election of Barack Obama, and that this pattern continues under President Trump. Using a Bayesian model to infer latent approval from Gallup polls and to regress approval on macroeconomic indicators, we find that the previous economic associations with presidential approval have changed and have lost much of their predictive power.

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<sup>2</sup> See the previously cited Gallup site for more detail.

This paper proceeds by briefly reviewing the relevant literature about presidential approval, providing a summary of how scholars understand presidential approval – what it is, and what drives it. We then present some of the economic data explored above, showing the relationships between macroeconomic data and presidential approval, documenting changing associations and exploring the origins of such differences. Third, we offer explanations for this ostensible disconnect between stronger economic times and lower presidential approval. Fourth and finally, we conclude with potential avenues for other scholars to explore, either those who wish to bolster our findings, or seek ways to refute them.

We conclude by suggesting that the concept of presidential approval has evolved, and that partisanship and polarization plausibly best explain that evolution. Presidential approval, we contend, is now largely a product of (a) political polarization; (b) the means by which citizens consume (or do not consume) news; and (c) the evolving nature of the presidency (specifically, the public relations/marketing function of the office, and the concomitant, high expectations citizens hold for the presidency). Collectively these forces have transformed both the presidency and our meaning of the phrase “presidential approval” largely into a proxy for partisanship.

## II. Literature Review

What is presidential approval and why does it matter? Political scientists especially have been intrigued by presidential popularity and approval, both as an independent and dependent variable. Neustadt’s *Presidential Power* (1991) astutely asserted that presidential power is the

power to persuade, and it did not take long after Mueller's seminal 1970 article on presidential popularity for political scientists to delve into how, how much, when, or if presidential popularity affected legislative agendas and electoral outcomes. Additionally, the public presidency literature asserts that presidential success is challenged by a variety of factors, including institutional constraints, such as party control of Congress; the policy preferences and agendas of legislative committee chairs; the constitutionally ordained advice and consent function of the U.S. senate; and the episodic peculiarities of current events, such as natural disasters or the unexpected departure (death, retirement) of a Supreme Court justice. Rather, Edwards (1983) among others, contends that public *expectations* affect presidential success, and that as citizens see and hear the president performing tasks, functions and duties (both important and trivial), they expect the president to serve as chief problem solver. In short, the public has her eyes on the presidency, and has high expectations of what presidents can and will fulfill in office.

The increasingly public nature of the presidency (press conferences, public addresses, tweets), necessitates a reconsideration of how the public presidency affects how citizens perceive both the presidency and the president. Farnsworth (2008) suggests that the president increasingly serves as a public relations chief, who, with his public opinion and press apparatus, spins the news to advance his agenda (also see Waterman et al. 2014).

In this paper, we focus on less on the meaningfulness of presidential approval as an independent variable that shapes policy or electoral outcomes and instead concentrate on the

meaningfulness of presidential approval as a proxy of how citizens think of and evaluate presidential job performance. The relevant scholarly literature contends that presidential approval is largely a function of measurable concepts, namely economic success, foreign and domestic policy successes, and rally around the flag effects, which are often correlated and a byproduct of the latter foreign/diplomatic achievements just cited (see, among others, Edwards and Gallup 1990; Brody 1991; Eschbaugh-Soha and Peake 2011; and Choi et al. 2016).

The depth of the presidential approval literature and the questions raised in it are too numerous to summarize. In their extensive literature review and analysis of presidential approval, Gronke and Newman (2003) note the [then] burgeoning debate about the electoral value of presidential approval. Our work fits neatly into their ‘second wave’ of this research – that of advancing specification and estimation of what presidential approval is, how it is measured and what causes it to fluctuate.

Some of the economic voting literature directly addresses presidential approval and its relationship to economics. Stegmaier and Norpoth’s (2018) analysis of unemployment and President Trump’s approval reminds us that the relationship (and correlations) between presidential approval and economically sanguine data are inconsistent and that, as noted above, presidents inherit economies from previous administrations. “[P]residents typically do not ‘own’ the economy until they’ve been in office for more than a year.” Earlier work by Norpoth and Yantek (1983) addresses the complicated question of lagged effects – both in measuring them and their ostensible impact. They help to “specify the impact of economic conditions in a way

that is theoretically more pleasing and confirms the *causal* nature of economic variables for government policy” (Ibid, 786), reiterating in their conclusion that economic performance matters in how citizens perceive the president. Additional work by Lewis-Beck and his colleagues (e.g., Lewis-Beck and Lobo 2017; Dassonneville and Lewis-Beck 2014) further advance this research – in testing ecologically fallacy counterhypotheses, and in considering the role of economic crises in helping us understand citizens’ voting decisions.

Similarly, D’Elia and Norpoth’s (2014) work on bad economic times includes a thoughtful discussion on attribution – namely if, how and when citizens blame presidents for the bad economic times they may have inherited. Also noteworthy is their reminder that most citizens are not voracious consumers of economic news, and those who do follow economic news hold views about the economy similar to those who do not (Ibid, 476). This point is important for our study correlating macroeconomic indicators for presidential approval if only to remind ourselves that any causal links between the two are tenuous without a compelling narrative linking the two. While it is plausible that retrospective evaluations of the economy affect presidential approval (that is, I believe that the economy is doing poorly, therefore I disapprove of the president), it remains an open (and compelling question) why citizens would disapprove of the president if the economy were doing well. The authors conclude that polarized media may shape citizens’ attitudes. We share their sentiments, and will return to and elaborate on this point in our conclusion.



Even in this literature review, we dutifully note how complicated this literature is – to review, synthesize and summarize – in large part because of the fine line (and important distinction) between causation and correlation. Even when the presidential approval literature does not explicitly state that the above factors *cause* presidential approval to rise or ebb, there is an embedded assumption that presidential approval is largely driven by economic and military success, as well as other factors such as responding to domestic and international crises.

Methodological and statistical issues further complicate the study of presidential approval. Since poll results are inherently subject to sampling uncertainty, techniques are required to infer latent approval from the underlying data. As a result, there is a rich literature on poll inference, primarily within the context of election forecasting. Methods range from the Bayesian methods proposed by Linzer (2013) and Jackman (2005), to the post-stratified non-representative procedure of Wang et al. (2015), and to the application of neural networks to predict individual voter preferences (Rosenman and Viswanathan 2018). Again, we bring these issues to the attention to the reader to acknowledge that any argument, including ours, that contends economic factors are not driving presidential approval as it has in the past, is one that requires an appreciation of the statistical techniques used by previous scholars, and the trade-offs and errors (hopefully mitigated) by employing those techniques.

### III. Presidential approval and economic data

Using Gallup polling data aggregated by the American Presidency Project at UC Santa Barbara, we first plot the trajectory of presidential approval beginning with President Franklin

Roosevelt (see Figure One). Immediately, two facts are clear: (1) approval tends to be quite volatile within presidents; and (2) transitions between presidents are often associated with significant positive jumps in approval. Also, the trajectory of approval for President Obama appears to be much less volatile than that of previous presidents.

[Insert Figure One here.]

In Figure Two, we contrast presidential approval with Organization for Economic Co-operation and Development (OECD) consumer confidence data specific to the United States. Presidential approval tracks quite well with consumer confidence until the Obama and Trump presidencies. Although consumer confidence has steadily risen throughout both the Obama and Trump presidencies, approval remains relatively flat.

[Insert Figure Two here.]

We explore the relationship between presidential and other presidency-related poll data in Figures Three and Four. In Figure Three, we review presidential approval and confidence in the presidency to determine if other presidency-related poll data are also less correlated. The data indicate that presidential approval continues to track well with confidence in the institution of the presidency despite the change in the relationship between approval and consumer confidence.

[Insert Figures Three and Four here.]

While presidential approval appeared to be historically positively correlated with consumer confidence, that relationship is broken under the Obama and Trump administrations. We therefore explore the relationship between presidential approval and another poll question, namely, the right track/wrong direction question, to determine if a break occurs in this other

popular indicator about economic confidence and presidential performance. Figure Four shows that presidential approval, even under Obama and Trump, still tracks well with responses to Gallup's question: "In general, are you satisfied or dissatisfied with the way things are going in the United States at this time?" These initial graphs illustrate that presidential approval, confidence in the institution of the presidency, and the right/wrong track tend to move together even for Presidents Obama and Trump, although consumer confidence and presidential approval no longer appear to be as positively correlated as before.

To confirm that consumer confidence no longer tracks with presidential approval, we then calculate the correlations between presidential approval and (a) consumer confidence and (b) the right/wrong track by president. For simplicity, we assume that presidential approval is localized to the ending date of each Gallup poll sample. We calculate the correlations using the method of "last observation carried forward" to associate a level of right/wrong track and consumer confidence with each approval poll. Results are presented in Table One and Table Two.<sup>3</sup> Table One shows a clear break in the positive correlation between consumer confidence and presidential approval with President Obama. With the exception of presidents Eisenhower, Kennedy, Ford, and Obama, the correlation between presidential approval and consumer confidence is positive and statistically significant at the 0.05 level, ranging from 19.07% to 76.09%. The lack of statistical significance for presidents Kennedy and Ford might be explained by Kennedy's assassination (and short tenure in office) and the unique nature of Ford's truncated

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<sup>3</sup> Since right/wrong track and consumer confidence are reported monthly, we use this method of "last observation carried forward" to align the timing of polls with the other data.

presidency. Obama is the only president with a statistically significant *negative* correlation, and Trump's correlation is similar to George W. Bush's correlation.

Table Two tells a similar story regarding the correlation between approval and right/wrong direction. The pre-Obama statistically significant correlations range from 61.76% to 92.82%. The correlations for Presidents Obama and Trump are remarkably lower: President Obama has a correlation of 35.55% and Trump has a correlation of 56.02% at the time of analysis. The first Obama Administration has a correlation of 44.34% and the second Obama Administration has a correlation of 44.24%; both are statistically significant at well below the 0.05 level. Trump's correlation is notably higher than Obama's, but it is still lower than the pre-Obama levels.

[Insert Tables One and Two here.]

Collectively, these analyses indicate that the previous pattern of presidential approval with respect to consumer confidence has changed at the beginning of President Obama's tenure, and that this break continues with President Trump. To analyze this break in approval further, we modify the regression model utilized by Choi et al. (2016) to search for potential structural breaks in the relationship between approval and macroeconomic indicators. We obtain monthly consumer confidence (consumer sentiment) as measured by the University of Michigan's Surveys of Consumers (UMCSENT); monthly inflation rate calculated as the percentage change in monthly CPI (CPALTT01USM661S); and the monthly civilian unemployment rate (UNRATE) from the FRED database maintained by the Federal Reserve Bank of St. Louis. We

also include a presidential transition dummy variable to control for a honeymoon effect. Observations are taken on the first of each month and we take the first difference of the macroeconomic indicators to avoid the effect of unit roots.

#### IV. Methodology for explaining presidential approval during the Obama and Trump presidencies

Since each level of approval reported by Gallup is the result of a poll, presidential approval measurements are subject to sampling uncertainty. To infer latent approval while considering its inherent time-series nature, we borrow from the extensive literature on Bayesian election forecasting, specifically Linzer (2013) and Jackman (2005). We also employ a Bayesian model because there are presidential approval polls that do not align with the dates when economic data are recorded at the first of each month (see Footnote Four for further detail).

We fit a hierarchical model for each president to recover the posterior distribution  $\mu_t$ , the latent level of presidential approval estimated by poll result  $y_t$ . Our model is specified by the following hierarchical form:

$$y_t \sim \mathcal{N}(\mu_t, \sigma^2)$$

$$\mu_t \sim \mathcal{N}(\mu_{t-1} \Delta \tau_t S^2)$$

$$\sigma^2 \sim \text{Scaled - Inv - } \chi^2(v_\sigma, \sigma_0^2)$$

$$S^2 \sim \text{Scaled - Inv - } \chi^2(v_S, S_0^2)$$

Following Linzer, we localize the result of each poll to the final day of polling.  $\Delta\tau_t$  therefore represents the time-step measured in days between poll end-dates;  $\sigma^2$  measures sampling uncertainty of the polls; and  $S^2$  represents the volatility of daily fluctuations in approval.<sup>5</sup> An important feature of the model is that the normal likelihood does not depend on poll sample sizes.<sup>6</sup> Furthermore, pollsters often have proprietary methods of analyzing and weighting the raw poll results (Hillygus 2001), so a binomial likelihood is not entirely valid either. Since the reported approval value is therefore relatively “black box”, we have chosen to represent it as Gaussian.

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<sup>4</sup> Many polls are “mistimed” for our purposes as they do not align with the macroeconomic data at the first of each month. One advantage of the Bayesian model is that it provides a mechanism for such “missing data” to be imputed in a manner that is consistent with the hierarchical model. When considering approval  $\tilde{\mu}_t$  on some date without a coinciding poll, the datapoint is bracketed by dates  $L$  (before date  $t$ ) and  $R$  (after date  $t$ ); the conditional posterior for  $\tilde{\mu}_t$  is therefore characterized by  $\tilde{\mu}_L \sim \mathcal{N}(\mu_L, \Delta\tau_L S^2)$  and  $\tilde{\mu}_R \sim \mathcal{N}(\mu_R, \Delta\tau_R S^2)$ . By combining these into a single distribution, the posterior can be shown to be an interpolation between  $\mu_L$  and  $\mu_R$ :  $\tilde{\mu} \sim \mathcal{N}\left(\frac{\Delta\tau_R \mu_L + \Delta\tau_L \mu_R}{\Delta\tau_R + \Delta\tau_L}, S^2 \frac{\Delta\tau_R \Delta\tau_L}{\Delta\tau_R + \Delta\tau_L}\right)$ .

<sup>5</sup> To elicit the prior parameters, we fit a Hodrick-Prescott filter and use the trend components as crude estimates for the trajectory of approval  $\hat{\mu}_t$ . As the likelihood can be rewritten as  $(y_t - \mu_t) \sim \mathcal{N}(0, \sigma^2)$ , we set  $\sigma_0^2 = \widehat{Var}[y_t - \hat{\mu}_t]$ . Since each of the  $n$  observations for a given president enter into this parameter calculation we set the degrees of freedom parameter to  $v_\sigma = n$ . Similarly, the prior for  $\mu_t$  can be manipulated to show  $Var\left[\frac{\mu_t - \mu_{t-1}}{\sqrt{\Delta\tau_t}}\right] = S^2$ , so we set the parameters as  $S_0^2 = \widehat{Var}\left[\frac{\hat{\mu}_t - \hat{\mu}_{t-1}}{\sqrt{\Delta\tau_t}}\right]$  and  $v_S = n - 1$ .

<sup>6</sup> As the hierarchical model is conditionally conjugate, we employ the Gibbs Sampler to obtain the posterior. We fit the model for each president separately and simulate four chains, each with a “burn-in” of 5,000 iterations followed by 5,000 samples. We use thinning and retain every 20th sample to reduce autocorrelation, leaving 1,000 posterior samples for each parameter. The PSR of each parameter is very close to one, indicating good convergence.

To test for structural breaks in the relationship between presidential approval, we employ the following regression model to determine if the relationship with macroeconomic indicators has changed:

$$\mu_t^{(i)} = \alpha_0 + \sum_{k=1}^p \alpha_k \mu_{t-k}^{(i)} + \sum_{k=0}^q \beta_k \Delta C_{t-k} + \sum_{k=0}^q \gamma_k \Delta U_{t-k} + \sum_{k=0}^q \delta_k \Delta I_{t-k} + \lambda R_t + \epsilon^7$$

$C_t$  represents the monthly level of consumer confidence;  $U_t$  is the monthly civilian unemployment rate;  $I_t$  is the monthly inflation rate; and  $R_t$  is a dummy indicator for whether the observation at month  $t$  is a presidential transition, i.e. whether a different president was in office during the previous month. By performing the regression on *each posterior trajectory* of  $\mu_t$ , our examination of the (posterior) distribution of the coefficients is a bootstrap analysis in which each simulated trajectory is drawn from the posterior joint-distribution of  $\mu_t$ .

To choose the lag lengths  $p$  and  $q$ , we use the alternative Deviance Information Criterion (DIC) presented by Gelman et al. (Chapter 7.2). When fitting the model to all available data with  $p = q$ , we find that the DIC is minimized for  $p = q = 12$ . To test for structural breaks, we apply the QLR test with 15% trimming on the  $p = q = 1, 6$ , and 12 models in each of the 1,000 simulated trajectories and tabulate the break dates returned by each QLR test in Table Three. We also performed two sensitivity analyses for the  $p = q = 12$  model. Figure Five contains a graphical representation of the QLR results and the two sensitivity analyses.

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<sup>7</sup> To test for unit roots in each of the simulated trajectories, we use a Bayesian Augmented Dickey-Fuller Test. For each trajectory we fit  $\Delta\mu_t^{(i)} = \alpha_0 + \alpha t + \beta\mu_t^{(i)} + \sum_{k=1}^p \Delta\mu_{t-k}^{(i)}$  via OLS. Since the ADF tests the null hypothesis of  $H_0: \beta = 0$  vs.  $H_a: \beta < 0$ , we can reject the null at the 0.05 level if 95% of estimated coefficients are less than zero. For lags zero to six, we found that all estimated  $\beta$  are less than zero. We therefore reject the null hypothesis and conclude that a unit root is not present in the posterior trajectories of  $\mu_t$ , validating the regression model on levels rather than on differences. Choi et al. reached the same conclusion of a lack of a unit root for approval.

[insert Figure Five here]

[insert Table Three here]

V. When and how did presidential approval change?

Based on the QLR results in Table Three and in Figure Five, we see strong evidence that a structural break occurred on February 1, 2009, the nearest data point to President Obama's inauguration on January 20, 2009. The two sensitivity QLR analyses identify August 1, 2001, and at February 1, 2009 as break dates (see Figure Five for more detail).

Given the evidence of a break date, we split the data into two periods: pre-Obama (Period I), and Obama and Trump (Period II). We again use the DIC to identify the appropriate lag length and now allow  $p$  and  $q$  to differ. We estimate the DIC for lags one through twelve. The optimal lag lengths in Period I are  $p = 12$  and  $q = 3$ , and  $p = 3$  and  $q = 9$  for Period II. Descriptive statistics for the posterior distributions of the regression coefficients are displayed in Tables Four and Five.

[Insert Tables Four and Five]

It is difficult to discern causality, so we restrict our interpretations of the results to *associations*. In the pre-Obama years (Table Four), increasing the change in consumer confidence by 1% is associated with a 0.1% (95% CI: 0.038%, 0.160%) increase in concurrent approval. Increases in the second and third lagged unemployment rate have a large detrimental



impact on current approval, with means -1.643 (95% CI: -2.933, -0.291) and -1.518 (95% CI: -2.812, -0.152) respectively. There is no statistically significant association between approval and inflationary shocks here, and the model fits very well as illustrated by the mean adjusted R<sup>2</sup> of 0.949 (95% CI: 0.941, 0.957). The honeymoon effect as captured by the presidential transition dummy variable is not statistically significant.

In Table Five (the Obama and Trump presidencies), all ten coefficients for changes in consumer confidence are statistically significant, yet the magnitudes are quite small, and the associations are of different directions. In the pre-Obama years, the zeroth lagged coefficient for consumer confidence changes was positive and the only statistically significant consumer confidence association. In the Obama and Trump presidencies, the relationship between consumer confidence and approval can be both positive and negative depending on the lag length.

Notably, seven of the unemployment change coefficients are statistically significant, and all but one of the seven are *positive*, indicating that an accelerating unemployment rate coincides with *increases* in presidential approval. This contradicts the consistent negative associations between changes in the unemployment rate and approval in the pre-Obama model. Further in contrast with the pre-Obama model, inflationary shocks have statistically significant associations in the Obama-Trump years. Although these coefficients have signs that are not all negative, the largest associations in absolute value are negative. There is still no statistically significant

honeymoon effect, and the model achieves a mean adjusted  $R^2$  of 0.782 (95% CI: 0.760, 0.805).

The Obama-Trump associations between approval and changes in the unemployment rate are especially interesting because the unemployment rate mainly decreased under Obama's presidential tenure, and this pattern has continued under President Trump. It is doubtful that the positive associations are indicative of a causal relationship; rather the positive associations may capture increases in presidential approval that occur contemporaneously with the decreasing unemployment rate.

Comparing the regression results for both periods yields conclusive evidence of a structural break beginning with President Obama's tenure. Specifically, the macroeconomic model has weakened, and the direction of effects are misaligned with what theory would suggest. In the pre-Obama era, changes in consumer confidence were associated with approval, and changes in the unemployment rate are negatively associated with approval. After Obama took office, the past levels of approval have a weaker association.

Changes in the unemployment rate under Obama and Trump have positive as well as negative associations with changes in presidential approval, and changes in inflation are mainly detrimental to approval. In addition, the consistent occurrence of statistically significant coefficients on large lags seems to indicate that macroeconomic shocks take longer to

“percolate” and effect political sentiment. In sum, (a) changes in unemployment have both positive and negative associations with recent presidential approval, suggesting economic data are not aligning with presidential approval as it has in the past, and (b) changes in the inflation rate are mainly negatively associated with approval. As a result, the previous model for understanding the economic determinants of presidential approval has broken; the Obama-Trump regression model has less predictive power and new explanations are needed to understand the drivers of presidential approval.

The question then arises, what is transpiring in the Obama and Trump years that are enervating the relationship between positive macroeconomics and presidential approval? We hypothesize that partisanship may best explain this phenomenon. In Figure Six, we plot the spread between presidential approval by party identification by incorporating data from Gallup and Ragsdale (2014). Here “spread” is defined as the absolute difference between the percentage of Democrats and Republicans who approve of the president’s job performance. With the exclusion of the decline in spread following September 11, 2001, the spread has steadily risen over time, beginning with President Clinton, indicating that approval has increasingly become a proxy for partisanship and party affiliation.

[Insert Figure Six here]

## V. Conclusion, and avenues for further research

The work above reveals that presidential approval no longer follows its historical pattern of rewarding presidents for periods of economic improvement. We conclude by proffering what we believe are plausible explanations for why presidential approval has evolved in meaning, namely, that it now increasingly correlates with partisanship, and not indicators of economic confidence, robustness, or the future direction of the nation.

It is possible that traditional macroeconomic data no longer capture personal economic sentiment. If a significant portion of the citizenry feel that they are struggling, then they will not express satisfaction with robust economic data or reward a president for it. In sum, healthy macroeconomic numbers may be poor indicators of perceptions of personal economic health. It is possible that a new socio-economic anxiety index is needed to determine how people's feelings correlate with presidential approval.

Along these lines, future study is needed to understand the mechanisms behind the lower correlations between presidential approval and consumer confidence, and more generally, economic robust activity. Measures accounting for inequality or economic anxiety may have a strong effect on presidential approval and are plausible candidates for explaining flat approval amidst seemingly healthy macroeconomic indicators. Frank's Toil Index (2011) measures how much work is required by the median worker to achieve a median standard-of-living ("monthly hours of work required for the median earner to rent the median house") and has risen steadily since 1970. This measure illustrates a plausible decoupling of the experiences of the "average worker" from the broader macroeconomy.

Aside from possible such “zeitgeist” or anxiety indexes, changing mechanisms and modes of news consumption should also be studied as impacting presidential approval, as media are the lenses through which perceptions of the president are obtained. In that vein, and in light of the partisan spread data we cite above, another plausible hypothesis is that political polarization within the U.S., and the concomitant news consumption by citizens, have made presidential approval a proxy for partisanship. As noted in Figure Six, the highly partisan flavor of presidential approval demands further analysis by those seeking to explain its evolving nature. Elite party polarization, and news media content and consumption, collectively have generated an increasingly polarized public. That we believe presidential approval has morphed into a proxy for polarization does not require us to determine which party has moved more to the left or right, nor do we have to resolve the chicken and egg causal arguments as to which came first – the extremist representatives, or the citizenry who elects and reelects them. What is important is that both parties have moved towards their respective poles, resulting in elected officials who increasingly value extremism over moderation (Mann and Ornstein 2016). Americans therefore are increasingly represented by those who hold and extol ideological, immoderate positions. As U.S. politics becomes more partisan and polarized, one should expect partisanship to permeate into other political dimensions, including how people perceive the president’s job performance (see Hopkins 2017).

News media content and consumption also produce an increasingly polarized public. Polarized media content and consumption fuel political polarization among citizens and survey

respondents (see Prior 2007; Sunstein 2007; Iyengar and Hahn 2009; Knobloch-Westerwick and Meng 2011; Stroud 2011; Levendusky 2013; and Settle 2018). Since political narratives and opinions are often viewed and read through partisan lenses, citizens increasingly see politics, including the presidency, as a partisan institution. The increasingly public nature of the presidency, with concomitant high expectations for the office to rectify political, social and economic woes, may also contribute to citizens' inability to conceptualize politics with non-partisan lenses (see Campbell 2016; Suri 2017; and Dickerson 2018). More of today's politically engaged citizens, often known as issue publics, engage in politics because of their tribal loyalty; if it is that partisan loyalty that keeps them invested in politics, then one should not be surprised that partisan lenses filter their view of presidential approval.

While this research indicates that presidential approval no longer correlates with positive macroeconomic indicators, we are not suggesting that presidential approval has lost all meaning, or that it should be rendered into the dustbin of public opinion history. Our research is a reminder that presidential approval is a construct with potentially multiple meanings. Pollsters would benefit from remembering Bishop's (2005) insights about ambiguous concepts, specifically the need to ask more questions to understand better what respondents meant by their answers. One could envision questions like "Does President X deserve some credit/blame for the economic good/bad times?" "Why or why not?" as benefiting both scholars and practitioners alike in determining what presidential approval means to the public. Similarly, while we appreciate Ponder's (2017) argument that presidential approval can be muted by low levels of trust in government, ebbing trust levels has been a multi-decade phenomenon. That our research

reveals the economic-approval disconnect to commence in early 2009 bolsters the point that something is amiss and deserves further scholarly scrutiny.

Political polarization has a long history throughout the history of the United States and had been fomenting in the 1980s and 90s (see Skocpol and Williamson 2016). Hyper-partisanship in the media and political arenas appeared to reignite during the Obama presidency, and so it remains curious why the previously “normal”, highly correlating relationships among presidential approval, the right/wrong direction question, economic indicators and consumer confidence enervated soon after President Obama took office and continues to this day. Did the meaning of presidential approval whither because of the Obama administration’s not working well with House and Senate Republicans? Was it because of the rise of social media, which allowed niche news consumption? What role did the financial collapse of 2008 play in exacerbating economic anxieties? What role if any did race play? We can only speculate and leave it to other scholars to explore these and other plausible explanations.

Unless political polarization reverses course, we should expect continued evidence of a structural break in the relationship between presidential approval and macroeconomic indicators. The decrease in the explanatory power of the model also indicates that macroeconomic forces no longer drive presidential approval to the extent that they previously did. Furthermore, the associations that we have identified no longer have the consistent direction that theory suggests. Time will tell if hyper-partisanship is a phase or an enduring legacy of the 21<sup>st</sup>-Century U.S. politics. Its current durability, combined with seemingly positive macroeconomic indicators no

longer aligning with high rates of presidential approval, suggest that the potency and meaning of presidential approval has evolved, if not dissipated.

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*Figure 1: Presidential approval as measured by Gallup beginning with FDR. Raw poll results are reported without any Bayesian inference.*

*Figure 2: Gallup presidential approval and OECD consumer confidence for the US. The portions colored in red indicate datapoints for the Obama and Trump presidencies. Note that approval remains “flat” for Obama and Trump despite the generally increasing level of consumer confidence.*

*Figure 3: Gallup presidential approval and confidence in the institution of the presidency. Confidence is measured annually, and the portion of approval colored in red indicate datapoints for the Obama and Trump presidencies.*

*Figure 4: Gallup presidential approval and right/wrong track. The portions colored in red indicate datapoints for the Obama and Trump presidencies.*

*Figure 5: Distribution of F statistics produced during the QLR test for the  $p = q = 12$  model. The posterior mean and 95% credible interval are presented for the F statistic at each date; the distribution is with respect to each F-statistic for each date of the 1000 simulated trajectories of approval. We also performed a sensitivity analysis in which we replaced the trajectories of  $\mu_t$  with the posterior mean and then with values obtained by linearly interpolating the raw poll results. The mean model identified break date of 2/1/2009, and, while the interpolated model returned an estimated break date of 8/1/2001, it also has an F statistic spike coinciding with 2/1/2009.*

*Figure 6: The spread between presidential approval by political party affiliation, i.e. the absolute difference between the percentage of Democrats and Republicans who approve. Points represent Gallup data and lines represent data from Ragsdale 2014.*

Table 1: Correlation between presidential approval and consumer confidence. P-values are rounded to three decimal places and test the null hypothesis that the correlation is equal to zero.

President	Correlation	P-Value
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John F. Kennedy	29.08%	0.072
Lyndon B. Johnson	71.05%	0.000
Richard Nixon	76.09%	0.000
Gerald R. Ford	6.55%	0.704
Jimmy Carter	72.34%	0.000
Ronald Reagan	40.28%	0.000
George H. W. Bush	19.07%	0.022
William J. Clinton	73.43%	0.000
George W. Bush	42.42%	0.000
Barack Obama	-15.89%	0.000
Donald J. Trump	40.65%	0.000



Table 2: Correlation between presidential approval and right/wrong track. P-values are rounded to three decimal places and test the null hypothesis that the correlation is equal to zero.

<b>President</b>	<b>Correlation</b>	<b>P-Value</b>
Jimmy Carter	14.27%	0.380
Ronald Reagan	61.76%	0.000
George H. W. Bush	89.29%	0.000
William J. Clinton	84.52%	0.000
George W. Bush	92.82%	0.000
Barack Obama	35.55%	0.000
Donald J. Trump	56.02%	0.000

Table 3: A tabulation of the identified break date in each of the 1000 posterior trajectories of approval. Only dates occurring with a frequency of at least 1% are displayed. The minimum QLR statistic corresponds to the smallest observed QLR test statistic observed for each identified date. For a single restriction, the cutoff for statistical significance of the QLR statistic is 12.16 at the 1% level, lower than each minimum QLR statistic. Since the cutoff falls as the number of restrictions increase, each returned QLR statistic is highly statistically significant, well above the 12.16 cutoff.

<b>Break Date</b>	<b>Minimum QLR Statistic</b>	<b>Frequency</b>
<i>p = q = 1</i>		
2/1/2009	53.97	75.1%
5/1/2009	48.61	19.2%
1/1/2009	55.06	1.5%
1/1/2011	58.91	1.5%
<i>p = q = 6</i>		
2/1/2009	67.2	78.3%
1/1/2009	69.0	21.2%
<i>p = q = 12</i>		
2/1/2009	83.7	67.4%
1/1/2009	92.3	22.2%
3/1/1992	89.8	1.2%

Table 4: Summary statistics for the posterior regression coefficients for DIC-selected pre-Obama model. The first row of each cell is the posterior mean and standard deviation, while the second row is the Bayesian 95% credible interval.

<b>Coefficient</b>	<b>Lag</b>	<b>Mean (SD)</b>	<b>95% CI</b>
Intercept		1.296 (0.136)	1.013, 1.572
Approval	1	1.171 (0.052)	1.071, 1.272
	2	-0.208 (0.099)	-0.404, -0.022
	3	-0.076 (0.104)	-0.271, 0.140
	4	0.067 (0.103)	-0.135, 0.263
	5	0.022 (0.100)	-0.174, 0.214
	6	-0.046 (0.098)	-0.246, 0.146
	7	0.035 (0.096)	-0.154, 0.224
	8	0.024 (0.095)	-0.163, 0.205
	9	-0.048 (0.098)	-0.239, 0.144
	10	-0.039 (0.094)	-0.225, 0.138
	11	0.062 (0.087)	-0.101, 0.236
	12	0.006 (0.048)	-0.089, 0.099
Consumer confidence (change)	0	0.100 (0.031)	0.038, 0.160
	1	0.044 (0.030)	-0.016, 0.106
	2	0.014 (0.030)	-0.046, 0.072
	3	0.038 (0.030)	-0.024, 0.098
Unemployment rate (change)	0	0.346 (0.664)	-0.985, 1.573
	1	-0.267 (0.667)	-1.623, 0.999
	2	-1.643 (0.683)	-2.933, -0.291
	3	-1.518 (0.690)	-2.812, -0.152

Inflation rate (change)	0	-0.243 (0.439)	-1.172, 0.581
	1	-0.275 (0.437)	-1.150, 0.564
	2	-0.475 (0.417)	-1.303, 0.344
	3	-0.448 (0.48)	-1.372, 0.577
Transition		2.466 (3.468)	-4.383, 9.012
Adjusted R <sup>2</sup>		0.949 (0.004)	0.941, 0.957

Table 5: Summary statistics for the posterior regression coefficients for DIC-selected Obama and Trump model. The first row of each cell is the posterior mean and standard deviation, while the second row is the Bayesian 95% credible interval.

<b>Coefficient</b>	<b>Lag</b>	<b>Mean (SD)</b>	<b>95% CI</b>
Intercept		12.460 (0.677)	11.175, 13.767
Approval	1	0.710 (0.043)	0.627, 0.803
	2	0.004 (0.045)	-0.090, 0.082
	3	0.030 (0.029)	-0.029, 0.085
Consumer confidence (change)	0	0.103 (0.017)	0.070, 0.138
	1	0.112 (0.017)	0.078, 0.145
	2	0.161 (0.018)	0.126, 0.196
	3	-0.036 (0.017)	-0.069, -0.003
	4	-0.058 (0.017)	-0.091, -0.026
	5	0.046 (0.016)	0.015, 0.077
	6	-0.076 (0.016)	-0.108, -0.047
	7	0.031 (0.016)	0.001, 0.063
	8	-0.112 (0.015)	-0.140, -0.083
	9	-0.093 (0.016)	-0.125, -0.063
Unemployment rate (change)	0	4.397 (0.492)	3.467, 5.328
	1	3.993 (0.492)	3.000, 4.935
	2	4.309 (0.48)	3.359, 5.225
	3	3.144 (0.467)	2.262, 3.997
	4	1.281 (0.443)	0.390, 2.102
	5	-0.627 (0.395)	-1.37, 0.152
	6	0.471 (0.408)	-0.346, 1.231

	7	0.810 (0.424)	-0.001, 1.65
	8	-4.989 (0.403)	-5.785, -4.203
	9	2.237 (0.415)	1.457, 3.093
Inflation rate (change)	0	1.156 (0.306)	0.535, 1.738
	1	1.745 (0.248)	1.263, 2.232
	2	0.078 (0.243)	-0.395, 0.572
	3	-3.308 (0.249)	-3.78, -2.818
	4	-2.393 (0.272)	-2.916, -1.824
	5	-1.258 (0.294)	-1.829, -0.717
	6	-3.682 (0.253)	-4.187, -3.190
	7	-0.173 (0.239)	-0.629, 0.310
	8	0.363 (0.223)	-0.065, 0.782
	9	0.260 (0.200)	-0.127, 0.651
Transition		0.402 (0.693)	-0.952, 1.737
Adjusted R <sup>2</sup>		0.782 (0.012)	0.760, 0.805